ABSTRACT

PUBLIC ADMINISTRATION

CABASSA, WALTER, JR., B.A., Rider College, 1981

An Exploratory Analysis of The Feasibility of Establishing Work Measurements in the Bureau of Park Maintenance in the City of Atlanta

Advisor: Professor George Kugblenu

Degree Paper date: July 25, 1986

The primary intent of this paper is to explore the feasibility of developing work measurements for the City of Atlanta's Department of Parks and Recreation - Bureau of Park Maintenance. An attempt has also been made to improve the managerial capacity of Park Administrators by enhancing the quality and quantity of the management data made available to them.

An exploratory methodology was utilized in conducting the study. The primary data were collected from field research. The secondary data were obtained from City documents.

The findings suggested that the work measurement could improve the productivity of park maintenance operations. However, further research is warranted to expand upon the research presented in the paper.

AN EXPLORATORY ANALYSIS OF THE FEASIBILITY OF ESTABLISHING WORK MEASUREMENTS IN THE BUREAU OF PARK MAINTENANCE IN THE CITY OF ATLANTA

A DEGREE PAPER

SUBMITTED TO THE FACULTY OF ATLANTA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF PUBLIC ADMINISTRATION

BY

WALTER CABASSA, JR.

DEPARTMENT OF PUBLIC ADMINISTRATION

ATLANTA, GEORGIA

JULY 1986

TABLE OF CONTENTS

Page

LIST OF TABLES.....iv

CHAPTER

I. INTRODUCTION..... 1

Defining Work Measurement..... 1

II. THE PROBLEM AND ITS SETTING..... 4

The Agency..... 4
Internship Experience..... 5
Statement of the Problem..... 6

III. REVIEW OF RELEVANT LITERATURE..... 8

IV. METHODOLOGY..... 14

Primary Data..... 14
Secondary Data..... 16
Random Sample..... 16

V. FINDINGS AND DISCUSSIONS..... 19

Standard Time Estimates..... 22
Staffing..... 23
Equipment/Standardization..... 24
Equipment/Personnel..... 24

VI. CONCLUSIONS AND RECOMMENDATIONS..... 26

Standard Time Estimates..... 26
Staffing..... 27
Equipment/Standardization..... 28
Equipment/Personnel..... 28
Further Research..... 29

APPENDICES..... 31

BIBLIOGRAPHY..... 42

LIST OF TABLES

Table Page

1. Utilization of Employees By Seasons Proposed Under the Touche Ross Study 1973-74..... 21

2. Maintenance Service Areas Sick Leave Usage For 1982 (Through the 16th Pay Period)..... 23

I. INTRODUCTION

Productivity Analysis in local government is one of the fastest growing managerial tools of modern times. No longer can public administrators disregard the fact that fiscal resources are limited. Therefore, as a result of the new state of the art in productivity measurement, many state and local governments do realize that productivity efforts could result in improving the efficiency and effectiveness of public services. Productivity, as a managerial concept, has been developing as a trend among many government administrations within the last decade.[1]

The International City Management Association (ICMA), the National Science Foundation (NSF), the National Commission on Productivity (NCOP), and other organizations have been actively involved in productivity related issues. These organizations have been mainly responsible for the development of methodologies to assist public administrators. In 1972, an ICMA sponsored research conducted by the National Commission on Productivity was responsible for improving

---

[1]Donald J. Borut and Steve Carter, "Local Productivity Programs: An Overview," Public Management (June 1974), p. 9.

productivity measurement and evaluation in local government.[2] As a result of this research, many local governments became increasingly interested in the methodologies being advanced by these organizations.

Subsequently, work measurement became a specific type of productivity measurement. "Work measurement can be defined as the analysis of the stages of activity and the requirements at each of the stages; whereas, productivity refers to the end product and its relationship to output".[3]

In 1981, the Office of Budget, Audit and Management (BAM) in Atlanta, Georgia undertook its first attempt at implementing a productivity review to enhance its managerial capabilities and budget process. BAM concluded that Atlanta's phenomenal growth in population, industry and demand for public services would become an increasingly important matter in future years.

The Bureau of Parks Maintenance of the Department of Parks and Recreation was one such agency that was targeted for a productivity review. The Bureau is labor and capital intensive, and the cost of operations is steadily increasing. Both the cost of labor (employee's wages and fringe benefits) and the cost of capital supplies, (equipment and maintenance

---

[2]Ibid., p. 9.

[3]Jerome A. Marx, "Meanings and Measures of Productivity," Public Administration Review (November/December, 1982), p. 748.

repairs) have already affected the level of services and/or expansion of services for its users.

In summation, the general emphasis of this study is to explore the possibilities of improvements in the work activities and standards in the Bureau of Parks Maintenance operations.

II. THE PROBLEM AND ITS SETTING

In April of 1982, the Department of Budget and Planning - Bureau of Budget Policy and Evaluation (BBPE) was abolished and BBPE was reorganized as the Office of Budget, Audit and Management (BAM). The primary functions of BAM are as follows:

- o reviewing the departmental actions in regards to established City goals and policies;
- o review recommendations by the Commissioner of Finance in terms of their conformity with budget policy; and
- o periodically evaluate the inter and intra - departmental operations and functions to determine results, effectiveness and the need for policy for program changes.[4]

The Office of Budget, Audit and Management is composed of three divisions. They are:

- o a budget division - responsible for preparing and administering the budget for the mayor;
- o a management audit division - responsible for conducting management and operational audits as well as reviewing performance in departments and bureaus. In addition, this division is also responsible for grants management; and

---

[4]Atlanta, Georgia "Proposal for Reorganization of the Department of Budgeting and Planning." Office of Mayor 1982 (Typewritten)

- a management systems division - responsible for ensuring that the mayor has the necessary information to make managerial decisions.[5]

Internship Experience

The writer was assigned to the management audit division in the Office of Budget, Audit and Management as an intern from March 2, 1982 to August 21, 1982. The division is responsible for the conducting of management and operational audits, reviewing performance in departments and bureaus throughout City government. The management audit division was created to collect information that could be incorporated in the Financial Information Control System (a comprehensive system designed by the City of Atlanta to solve problems of budgeting.)

As an intern in BAM, the writer served as a management analyst. Specifically, the writer was assigned to conduct a work measurement study of the Park Maintenance Bureau of the Department of Parks and Recreation with two major objectives stated:

- to improve the managerial capacity of the Department of Parks and Recreation by enhancing the quality and quantity of the management data made available to its managers; and
- to assess the effectiveness and efficiency of work processes utilized by the parks division and make recommendations, where appropriate, on how they might be improved.

---

[5]Ibid., p. 2

The intern developed a research design as a means of conducting the study. Also, the intern participated in other tasks such as attending departmental meetings, budget hearings, and city council meetings.

Statement of the Problem

Following the completion of the first phase of the budget process, the Deputy Commissioner of the Department of Parks and Recreation requested assistance from the Office of Budget, Audit and Management to develop a study of Parks Maintenance Bureau's operations.

Actually, the problem is that the work activities within the Parks Maintenance Bureau were not thoroughly defined and/or systematically organized. For example, standard time estimates were not consistent throughout the Parks Maintenance Bureau, and work activities associated with the standard time estimates lack evidence of accountability. Lastly, it was difficult to improve work methods used in performing the work activities. Thus, it was reasonably concluded that there was not an established method upon which to assess the productivity of the bureau.

Consequently, a model for productivity improvement was needed in the Parks Maintenance Bureau. In addition to improving the operations of the bureau, the Deputy Commissioner believed that the availability of such information would be of vital importance in the preparation, justifi-

cation, and analysis of the Department of Parks and Recreation budget submission.

The Department of Parks and Recreation has two major bureaus: Bureau of Parks Maintenance and Bureau of Recreation. The Bureau of Parks Maintenance is composed of six service areas and is responsible for the up-keep of all grounds within the park system. Each service area is staffed by one service area manager and several crews (see Appendix A.) There are at least a total of two hundred and seventy parks (see Appendix B) within the park system.

The service areas or the park districts, as they are commonly called, are located within four geographical quadrants of the City of Atlanta. Service areas one and two are located in Southwest Atlanta; Service area three is located in Southeast Atlanta; Service areas four and five are located in Northeast Atlanta and Service Area six is located in Northwest Atlanta.

III. REVIEW OF RELEVANT LITERATURE

The emergence of a wide-body of knowledge about all types of productivity measurements has rapidly increased in the last decade. Productivity, in general, is commonly associated with efficient utilization of resources. Therefore, in this context many local governments have become interested in the concept. An overview of the concept is important in understanding productivity analysis. The following quotation sheds some light on the matter:

> There are two broad classes into which productivity concepts and corresponding measures can be grouped. One expresses productivity as the relationship of output of a producing enterprise, industry or economy to one type of input such as labor, capital, energy, etc. The other presents productivity as the relationship of output to a combination of inputs extending to a weighted aggregate of all associated inputs.[6]

Another author expounds on the subject in this manner:

> At some level of abstraction, the economist's definition of productivity is extremely simple and straightforward. It depends on the input-output relationship in which factors of productivity - land,

---

[6]Jerome A. Marx, "Meanings and Measures of Productivity," Public Administration Review (November/December, 1982), p. 748.

> labor, and capital are converted into outputs. The economist conventionally defines technological efficiency as an increase in output obtained from the same volume of inputs or where the same volume can be secured from smaller volumes of inputs. Economic efficiency on the other hand, defined in terms of conventional welfare economics, refers to improvement in consumer satisfaction.[7]

Within these two broad conceptual overviews, the primary basis for all productivity analysis can be discussed. However, there are problems that make the matter a little bit more nebulous. In short, the fundamental premise for a productivity measure is the input-output relationship. John W. Kendrick, Professor of Economics, George Washington University, reviews the input-output relationship in this manner:

> Broadly defined, productivity estimates or compares the output of an organization with one or more of the associated inputs, in real physical volume terms through time (or with similar organizations). When output is related to total input, the productivity ratio shows changes in efficiency with which resources are converted into final products.[8]

---

[7]Jesse Burkhead and Patrick J. Hennigan, "Productivity Analysis: For Definition and Order," Public Administration, Review (January/February, 1978), p. 34.

[8]John W. Kendrick, "Exploring Productivity Measurement in Government", Public Administration Review (June, 1963), p. 60.

Furthermore, Kendrick explains what is the composition of an output measure:

> Output measurement involves: 1) identifying all the various classes and specific types of final output - choose services or goods which implement the basic mission of the agency; 2) defining the various output in terms of measurable, standard units; 3) assembling data on the number of these standard units of output of each type of service produced currently and over the years covered by the historical study; 4) adjusting the units, where necessary for changes in characteristics in order to achieve consistency over time; and 5) estimating base period unit costs for purposes of combining or weighting the various output units into an aggregate - the choice weights base-period price or unit costs.[9]

The other side of the output-input equation is as follows:

> Inputs of the basic factors of production labor, and capital are generally measured in terms of the hours the factors are available for service, weighted by the average hourly compensation (or cost) in the base period. Inputs of intermediate goods or contract services are measured (like outputs) in terms of the quantities of each type consumed weighted by depending on the cost items or inputs to which the output indexes are to be related.[10]

In total, the emphasis on the output-input factor is the general foundation in understanding productivity analysis. Nonetheless, the object of defining output measurement is at the crux of the problem. According to Jerome Marx:

---

[9]Ibid., p. 61.

[10]Ibid., p. 61.

> Measuring output in the service activities is difficult because of the absence of a directly quantifiable entity which describes a unit of service...With regard to labor and other input data, the most serious limitation of existing measures is difficulty in taxing account of changes (sic) in the characteristics of input.[11]

Thus, ratios are primarily the indices for which administrations in local government can begin to assess the productivity of programs and organization, but the problems of the validity, the understandability, the timeliness, the uniqueness, and the controllability are limitations to the comprehensive nature of productivity analysis.[12]

In a general manner, productivity analysis has many sub-divisions. However, work measurement is one that has important relevancy to the research design of this study. Herbert Rosenberg maintains that:

> Work Measurement is a method for determining the relationship between the volume of work performed and the employee time expended in performing the volume. It provides a basis for comparing quantitative performance in like operations performed at different locations and the same operations at the same location over a period of time.[13]

---

[11]Jerome A. Marx, "Meanings and Measures of Productivity," Public Administration Review (November/December, 1972), p. 748.

[12]Harry P. Hartry, "Performance Measurement Principles and Techniques: An Overview for Local Government," Public Productivity Review (December 1980), p. 312.

[13]Herbert H. Rosenberg, "Can Work Measurement be Applied to the Personnel Office?", Public Administration Review (January, 1948), p. 41.

The development of work standards is very costly, mainly because of the time factor of training staff, however, the benefits are long-term and can yield tremendous savings, especially if the problem has not been examined in many years.[14]

The major hypothesis that influenced the study conducted by the Civilian Personnel Division of the Office of the Secretary of War 1945-46, was that "the preponderance of all work performed in a personnel office is subject to quantitative measurements."[15] As a result of the study, the researchers arrived at the following conclusion concerning the use of work measurement in the public sector:

> The method used is adaptable for use by other government agencies or by private industry. The basic elements of defining operations and work units, recording work units, and establishing standards at predetermined levels are more generally applicable... This fact was undeniably an advantage, and work measurement was a logical outgrowth of the orthodox management approach to effect standardization where feasible, and the standardized procedures are then simplified.[16]

---

[14]Hartry, "Performance Measurement Principles and Techniques?", p. 312

[15]Rosenberg, "Can Work Measurement be Applied to the Personnel Office?", p. 42

[16]Ibid., pp. 47-48.

Thus, work measurements are useful for relatively repetitive tasks as street repairs, vehicle maintenance, park and building and various types of inspections.

As stated previously, there is a steady trend growing towards productivity review in most local governments. The results of many public managers' efforts to develop programs are questionable, but beyond the notion of a conceptual basis for productivity analysis, some futuristic outlook is warranted. The major concern of many theorists and administrators is the fact that the public sector lacks competitiveness. In other words, there is not a central agency or uniform performance standards of data among similar governments.[17] Thus, Harry P. Hartry, noted author on productivity analysis, maintains that:

> Productivity measurement will be particularly useful if the following three types of comparisons are made:
>
> 1) Comparison of overtime - to provide information on trends and progress, if any. Lacking external standards, a government's own history can be used.
>
> 2) Comparisons with other jurisdictions, particularly those with similar characteristics - to provide some base line against which government can measure its own performance.
>
> 3) Comparisons among operational units within a jurisdiction, such as among solid waste collection crews, police precincts, or social service offices - so

---

[17]Frederick O. R. Haynes, Productivity in Local Government (Lexington, Mass.: Lexington Books, 1977), p. 13.

> the more productive units can be recognized (and their methods duplicated) while the less productive units can be given the necessary attention to improve their performance.[18]

Finally, the more comprehensive and detailed the productivity measures, the more useful they are in local governments. In addition, the productivity measurements have significant impact on cost of operations, therefore, making budget preparation more logical and long-term projections more feasible with specific targets set.[19] Lastly, a critical point to note is that all of the emphasis on productivity measurement is difficult to obtain if local governments use perverse measures to achieve goals and objectives.[20]

---

[18]Harry P. Hartry, "Issues in Productivity Measurement for Local Governments," Public Administration (November/December 1972), p. 777.

[19]Kendrick, "Exploring Productivity Measurement in Government," p. 64.

[20]Haynes, Productivity in Local Government, p. 11.

IV. METHODOLOGY

The exploratory methodological approach was utilized in conducting this study. Exploratory research is mainly used for problems that are relatively undefined and unstructured in scope.[21] The concept of productivity measurement is still in its embryonic stages of development; therefore, exploratory analysis is very suitable for this research. Moreover, the major objectives of exploratory research is to expand the already existing body of knowledge and to develop other models for further study.[22]

Primary Data

This part of the study entails measuring the time required to perform the work activities that comprise park district maintenance operations. It is done by observing the work activities as they are performed and recording their starting and ending times. Wrist watches are used as the timing instruments. Because the work activities, in most

---

[21]Earl R. Babbie, The Practice of Social Research, 2nd ed. (Belmont: California: Wadsworth Publishing Company, Inc.) p. 177.

[22]Ibid., p. 178.

instances, require a long time to perform, it is believed that regular wrist watches with second hands will be as effective as stop watches. In addition, to the starting and ending times, for each work activity for which observation is made, the following additional data were recorded:

- description of work activity being observed
- crew and service area affected
- number of observations being made of the work activity
- site or location where work activity is performed
- physical measurements associated with the work activity performed, i.e., acres, linear feet, square feet, etc.
- time consumed for activities other than the work activity itself, i.e., equipment maintenance, equipment failure, scheduled breaks, unscheduled breaks, etc.
- equipment/materials used
- process/methods employed to perform work activities.

An example of the form on which these data were recorded is presented in Appendix C.

The work activity performance times recorded will indicate the amount of staff hours currently required for park district maintenance operations and how the hours are utilized. These times are compared to the times, to the extent

that they are available, developed by the Parks Maintenance Bureau's 1981 study. In presenting the times observed, the study does not presuppose that they represent the times that should be required, although they may. The study merely is attempting to indicate what exists with respect to the manner the work activities comprising park district maintenance are presently performed. The information derived from the detailed review and the other information derived from the on-site time observations are used to determine the extent to which work processes being utilized in park district maintenance work activities can be made more efficient.

Secondary Data

The writer reviewed information that has been documented in city records, reports, studies, policy statements, manuals developed by the Office of Budget, Audit Management and various City departments and agencies.

On the basis of information developed and provided by the Park Maintenance Bureau for the 1981 study, a catalog of park maintenance work activities has already been developed (Appendix D).

Random Sample

Based on the inventory data developed by the Parks Maintenance Bureau, the park maintenance districts have a total of twenty-two ground maintenance crews. For the purpose

of the study, a sample of fifty percent or eleven crews are drawn from this number.

In an attempt to ensure that the crews selected would enable observations to be made of ground maintenance activities being performed in parks that are representative of the total park inventory, the number of crews selected from each district or service area was weighted according to the ratio of the acreage in the service area: the acreage of the total park inventory, excluding the golf courses. (For weighted averages computation and their application, see Appendix E.)

To ensure the randomness of the sample, the specific crews comprising the sample were selected from their respective service areas through the use of the random members table. Each ground maintenance crew is assigned a specific number and group of parks to maintain. Consequently, the parks that were observed are a function of the ground maintenance crews comprising the sample. In the City's park inventory, there exists many types of parks, e.g., mini parks, beauty spots, and neighborhood parks. Therefore, concern exists as to whether or not the parks which are assigned to the maintenance crews in the sample are representative of the various types of parks the City has in its inventory. To address this concern, a frequency distribution of parks was performed (see Appendix B) to show the various types of parks within the Parks Maintenance Bureau. The frequency distribu-

tion reveals typology of parks by service area. As a result of this information, the decision was made to stratify the random sample not only by maintenance crews within service areas, but also by the types of parks.

A random sample was successfully computed for the 11 crews (see Appendix F). Each maintenance crew randomly selected reflects the distribution of parks that each maintenance crew is assigned. For example, Maintenance Crew I of Service Area I contained zero beauty spots, two play lots, one mini park, five neighborhood parks, three community parks and zero regional parks. The above breakdown of parks was performed for all 10 remaining crews, service areas and typology of parks.

Since the random sample resulted in an array of stratifications, a percentage table was developed to show the representativeness of the random sample (see Appendix G). Within each category a percentage of each type of park was computed. In all cases except one, the sample design allowed for 50 percent or more of each type of park to be observed. The exception is the 48.0 percent representation of beauty spots.

In sum, the random sample appears to be a fair representation of the compositions of maintenance crews and the sizes and types of parks maintained. Also, the sample is even more impressive when it is considered that 60 percent of total acreage within six service areas is covered in the study.

V. FINDINGS AND DISCUSSIONS

The primary focus of the study has been the review and analysis of the work processes currently prescribed for the performance of park maintenance activities and the management thereof. This has involved the examination of the maintenance crews' work activity and standard time charts and conducting interviews with three of the six service area managers. The work activity and "standard time" chart contain the ground maintenance activities performed by the crews, the physical units involved (i.e., acres, square feet, etc.), the time required to perform the activities, the frequency with which each type is performed and the times of year. Examinations were conducted of work activity and "standard time" charts for thirteen crews, in which each of the six maintenance districts was represented by at least one crew.

In addition to examining the work activity and "standard time" charts, three days of the study were devoted to field observations and time measurement of crew one in Service Area I. Further, a work measurement study completed in 1973 by Touche Ross and Company of the City's park maintenance operations was reviewed. As part of the review, discussions were held with Touche Ross staff to ascertain more about

the study as well as to obtain guidance on the best approach to a study of this type.

Although the Touche Ross Study was done more than ten years ago, it still appears to have applicability as far as the seasonal dichotomy of park maintenance activities are concerned. For example, the manager of service area I was asked to take one of his parks and define the maintenance activities required for its upkeep, and the times of the year and the frequency with which the activities must be performed. Then a comparison was made of the time required to maintain the park before and after inclusion of the seasonal variations. Taking into consideration the impact of the seasonal changes on the required service levels of the maintenance activities, the total hours required to maintain this one park were reduced by approximately 17.7 percent. Assuming that litter control (which was not included in the original chart) required the same amount of time to perform, the reduction would be approximately 37.1 percent. The activity performance times in both charts are the estimates of the district manager.

Originally, field observations and time measurement studies were to be conducted of eleven crews among the six districts. However, upon the discovery of the Touche Ross and Company report, this aspect of the study was discontinued. With the availability of the Touche Ross study, it was concluded that rather than attempting to develop work standards for the park district maintenance operations as planned,

it would be more productive to attempt first to update the work done by Touche Ross. Comparisons were made between the total hours required to maintain parks that are in existence today which were also a part of the Touche Ross Study. In each instance in which this head-to-head comparison of the Touche Ross times to the times reported by Parks for the same parks could be made, the times differed considerably in both directions. However, in most instances Park times were greater (See Appendix H). As a result of this finding, primary emphasis of the study shifted as described earlier, to the study and analysis of work activity and "standard time" charts in an effort to determine the sources of these differences.

TABLE 1

UTILIZATION OF EMPLOYEES BY SEASONS
PROPOSED UNDER THE TOUCHE ROSS STUDY
1973-74

	Spring/Summer May 1 - Oct. 15	Fall/Winter Oct. 16 - Apr. 30	Labor Force Reduced by %
Southeast	49	31	37%
Northwest	33	25	24%
Southwest	27	20	25%
Northeast	46	30	35%
	155	106	31.6%

Source: "Field Study of Park Maintenance 1973-74," Touche Ross and Company, Atlanta, Georgia

Standard Time Estimates

The time estimates and manpower requirements developed and utilized by the parks suffer from several deficiencies. Among the major ones are the following:

a) Staffing patterns of crews do not distinguish between the maintenance activities and (the times required to perform them) performed in the spring/summer and fall/winter months of the year. This results in Parks staffing at peak levels year-round, when in the fall/winter months it should require less staff. During this time of year, there are not as many activities to perform; and those that are performed are done less frequently and/or require less time. Based on a study done by Touche Ross and Company of the park maintenance operations (in which the seasonal classification of maintenance activities was done), the amount of staff required for the fall/winter months (October 1 - April 30) were approximately 30 percent less than that required for the spring/summer months (May 1 - October 1) (See Table I). The seasonal work variation affected primarily laborer positions.

b) Double counting or reporting of times for activities that should be mutually exclusive. For example, on a given occurrence, tennis courts should be either blown-off or swept-off. The way it is reported in the work activity and "standard time" chart is that both activities are performed per occurrence. Another instance in which this tendency of double counting appears to occur is in mowing. Examination of the crews' charts revealed several instances in which some or all of the same park area is reported as being mowed twice, i.e., the charts indicated that some land areas were mowed with 60" Hustler (type of equipment) and 48" bush hog (type of equipment), therefore mowing an area of land is grossly inflated by these mutually exclusive events. Only one of the mowing events should be recorded as having occurred per standard time estimates.

"Standard time" estimates by Parks for some crews and/or parks appear excessive and illogical. Instances are reported in which it requires greatly different times, both in total hours and hours per unit, to mow grass with similar equipment.

Staffing

Absenteeism due to sick leave and unscheduled and/or use of annual leave during peak work periods appear to be a persistent problem in parks. In each of the three interviews conducted with district managers, this was mentioned as a serious problem. A cursory review of the sick leave records for the first eight months of 1982 of 30 randomly selected positions (5 from each maintenance service area) suggests that park maintenance employees use approximately three-fourths of their sick leave as it is earned (See Table II). With each crew averaging five employees, a crew can expect to have one employee off due to illness approximately one day per week of work. This results in the loss of 49 days or 392 manhours per year.

TABLE 2

MAINTENANCE SERVICE AREAS
SICK LEAVE USAGE FOR 1982
(THROUGH THE 16TH PAY PERIOD)

Service Areas	% of Sick Leave Used
I	69.7
II	73.5
III	64.4
IV	76.8
V	74.4
VI	94.5
Average	75.5

Source: Compiled by the Writer for this study from records in the City of Atlanta's office of Budget, Audit and Management.

The decrease in absenteeism of members of workcrews would improve the productivity of the park maintenance operations. This is especially important when considering the seasonal impact upon laborer positions during the peak season (May 1 - October 1).

Equipment/Standardization

There appear to be very few or no criteria established in Park Maintenance for determining equipment, type, mix and allocation. One district uses primarily slope mowers while other districts use hustlers. The push mowers are brought in three or four different types and widths. The decision on the type of equipment a district will purchase appears to be left almost, if not totally to the district manager.

Lack of policy encouraging, to the extent possible, standardization of the off-road equipment fleet purchased detracts from the Bureau of Motor Transport Services' ability to contract for replacement parts in an efficient and effective manner. Inability to get parts in a timely fashion is one of the factors which contributes to the long repair time that park maintenance experiences on its equipment.

The writer advocates that equipment inventory standardization will improve the productivity of park operations, because the equipment repairs can be made more efficiently if parts are stocked and readily available when repairs are needed.

Equipment/Personnel

Equipment repair, particularly of the small off-road equipment, takes too long and frequently repair is of poor quality -- equipment frequently breaks down again shortly after it has been repaired. The officials of Parks suggest that this is partly attributable to the repair of their equipment being considered a low priority by the Bureau of Motor Transport Services (BMTS). They indicated that this situation is aggravated by the fact that as mechanics become adept at repairing small off-road equipment, they are promoted or transferred to other types of equipment repair. Parks maintains that this results in a void of experience and quality mechanics to repair small off-road equipment.

The officials of BMTS deny this. It indicated that Parks' off-road equipment was just as much of a priority as the off-road equipment of other city departments. With respect to mechanics being promoted or transferred, BMTS indicated that it has very little or no control over this. If an individual wants to advance himself/herself, then that is his/her perogative.

The effect of personnel being inexperienced with equipment utilized in the park maintenance operations will diminish if standardization of equipment occurs. The personnel of BMTS will only have to familiarize themselves with standardized equipment inventory for all park maintenance operations, and with restricted inventory, this will improve productivity.

VI. CONCLUSIONS AND RECOMMENDATIONS

The aforementioned findings represent only a beginning of the effort necessary to make the improvements deemed desireable in the park maintenance operations. Only the first component or objective of the study -- an analysis of the work methods or processes of the park maintenance operations was addressed, and this was only partially done. However, although the study did not fully realize its objectives, it does address some of the basic problems that plague Parks. In short, considerably more work remains to be done to develop the managerial data necessary to manage park maintenance operations as effectively as desired. Therefore, rather than being seen as a fait accompli, the study should be viewed as the beginning of a much needed effort to improve the managerial capacity of the Department of Parks and Recreation - Bureau of Park Maintenance.

The recommendations are:

<u>Standard Time Estimates</u>

> Identify the tasks performed in each park, the seasons of year in which they are to be performed, the output (physical units) and the service level to be maintained (frequency tasks are to be performed). Each manager needs to review each of the parks within his district and go through the same exercise as the manager of Service Area I did for Ben Hill Park.

Revise current standard time estimates through the use of predetermined times, i.e. Touche Ross and Company study of 1973, crews' field experience to develop time and motion studies or standard time for performance of the tasks. Because it is more precise and accurate, the latter is preferred. However, of the alternatives mentioned, it is the most costly from the standpoint of staff and time requirements. Providing the latter alternative is selected, consideration should be given to seeking assistance from outside sources such as the Loaned Executive Program and/or the Georgia Tech School of Industrial Management. Any outside support obtained would be supplemented by staff from Parks and Management Audit in order to begin to develop these technical capabilities in-house.

Staffing

Develop a program to control sick leave abuse. Begin collecting sick leave usage data that will permit more effective monitoring and evaluation of employees' sick leave use. Employees who are suspected of abusing sick leave should be counseled and required to comply with all of the sick leave documentation regulations. A good sick leave record should be one of the major factors considered in determining whether an employee's performance for the year warrants a merit salary increment.

In addition to better administrative control and punitive measures to correct the sick leave problem, acceptable sick leave usage by employees should be encouraged through acknowledgement. For example, the service areas, crew, employee, etc., using the fewest or some other department defined level of sick leave usage should be awarded a certificate each year by the Commissioner; or there could be a trophy that would be rotated each year among the winning crew or district.

As regards the use of unscheduled or the use of annual leave during the busiest times of the year, district managers should exercise more affirmatively their discretion (provided in Chapter XV, Section 5, paragraph III of the Atlanta, Georgia Civil Service Rules and Regulations)[23] as to whether or not to approve such leave. Employees taking unauthorized leave would be reprimanded accordingly.

---

[23]Atlanta, GA., Civil Service Rules and Regulations Atlanta City Code, Vol. I (1977), Chapter XV, Sec. 5.

Equipment/Standardization

The standardization of equipment, which will enable BMTS to more effectively inventory parts for the equipment, should reduce considerably the delay in equipment repair. Beyond standardizing of off-road equipment, Parks needs to assign one position full time to coordinate the repair of all of its equipment and act as a liaison to the Bureau of Motor Transport Services. In interviews conducted with BMTS, it was indicated that this, in fact, was once the case, but that Parks has deviated from it. This position should be responsible for shopping all equipment, prioritizing the repair of the equipment and monitoring the repair so as to expedite its return to operable status. In addition to coordinating the repair of equipment, the position, under the supervision of Park Maintenance Bureau Director, should coordinate the purchase of equipment to ensure standardization of equipment from district to district. With respect to the quality of workmanship, this can be addressed through the park district managers completing BMTS "quality control form" in order that BMTS can determine and correct the problem that may be contributing to the poor quality of equipment repairs.

Finally, in evaluating the bids from vendors to supply the City with off-road equipment, the ability of the vendors to provide parts for their equipment within a specified time frame, as well as the lowest cost, should be a determining factor in who receives the bid.

Equipment/Personnel

To the extent that it is feasible to do so, equipment should be standardized among districts. Conversations with Bureau of Motor Transport indicated there is already some movement in this direction on their part. However, it would appear that Parks could expedite this movement by assessing the nature of the work to be done and selecting equipment accordingly. Guidelines should be developed for the selection of equipment and enforced by the office of the Deputy Director for park maintenance.

The work that remains to be done is as follows:

1. Identification of task to be performed in each park, the seasons of year in which they are to be performed, the output (physical units) involved and the service level to be maintained (frequency tasks are performed);

2. Determination of crew and equipment configuration necessary to perform tasks;

3. Development of time standards using either predetermined times, (i.e., Touche Ross Study of 1973 or some other means), time and motion studies or estimates based on crews' experience; and

4. Development of reporting instruments for the monitoring and management of park maintenance operations.

In addition to these tasks, the following concerns also should be investigated:

1. The transfer of the responsibility for ballfield maintenance to a specialized crew or crews that would be responsible for maintaining all city-owned and operated ballfields. As a result of this change, it is believed that savings could be realized through reducing the ballfield maintenance inventory which each district currently feels compelled to maintain. Also, this change should increase efficiency and improve the quality of ballfield maintenance. Currently, each maintenance crew is responsible for the ballfields within its assigned area; and

2. Consolidation of custodial services under a single person and conversion, to the extent possible, to a roving crew concept. Currently, approximately 14 custodial workers are divided among the six maintenance districts. In addition, some of the districts are supplementing their custodial staff with laborers. The trend in Parks has been to try to assign a custodial worker to each recreation center. However, with approximately forty-nine centers to maintain, this would be an expensive arrangement.

3. It is believed that converting to the roving crew concept and consolidating the custodial services function under one individual (i.e., the equivalent of a district manager) would result in the centers being maintained more effectively and efficiently

and the elimination of the need to add additional custodial staff.

In view of the remaining work to be done and the possible benefits that would accrue from it, consideration should be given to continuing the study. Providing the study is continued, a task force should be assembled to conduct it; and as mentioned previously, outside technical assistance should be sought. The task force would be comprised of staff from OBAM and the Department of Park and Recreation of the City of Atlanta, Georgia.

APPENDIX A

TYPES OF CREWS WITHIN MAINTENANCE PARK BUREAU

Appendix A

Types of Crews within Maintenance Park Bureau

Maintenance Crews	Cleaning Crews	Garbage Pick-up (City-Wide)
Service Area I		
1	2	1
2		
3		
Service Area II		
1	1	1
2		
3		
Service Area III		
1		
2		
3		
4		
5		
Service Area IV		
1	0	0
2		
3		
4		
5		
Service Area V		
1	1	1
2		
3		
Service Area VI		
1	0	0
2		
3		
Total 22		

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX B

FREQUENCY DISTRIBUTION OF PARKS

APPENDIX B

Frequency Distribution of Parks

Typology of Parks	Service Areas						
	I	II	III	IV	V	VI	Total
Beauty Spots (0-3)	12	4	7	33	32	12	100
Park Lots (0-3)	4	1	2	0	0	0	7
Mini Parks (0-3)	6	9	10	22	14	11	72
Neighborhood Parks (3-20)	14	14	14	7	14	7	17
Regional Parks (100 - +)	1	0	1	1	1	0	4
	41	31	36	63	63	36	270

( ) Acres

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX C

WORK ACTIVITY OBSERVATIONS

DATA COLLECTION FORM

WORK ACTIVITY OBSERVATIONS
DATA COLLECTION FORM

Work Activity: _____ Observer: _____ Date: _____

Crew #: _____ Service Area #: _____

OBSER.	SITE	# OF UNITS*	OBSERVED TIME START/STOP	TIME ADJUSTMENTS**	EQUIPMENT	MATERIALS	NOTES RE: PROCESS, METHOD, ETC.

* Units = acres, feet, inches, items, etc.

** Time adjustments -- reduction to time observed for work activity due to: Equipment Maintenance (EM), Equipment Failure (EF), Scheduled Breaks (SB), Unscheduled Breaks (UB), Other (O).

APPENDIX D

CATALOG FOR PARK MAINTENANCE ACTIVITIES

Appendix D

Catalog for Park Maintenance Activities

1000	Power Mowing
1010	7 gang mowing or E-10
1020	60" Hustler
1030	48" riding mowing
1040	Kut-Kwick bank mowing
1050	31" mowing (Kut-Kwick)
1060	small push mowing (21' to 24")
2000	Trimming or Edging
2010	power edging/trimming
2020	hand edging/trimming
3000	Caretaker Activities and Building Maintenance
3010	cleaning restroom
3020	sweeping
3030	dust mopping
3040	mopping floor
3050	stripping and waxing floor
3060	dusting and polishing floor
3080	vacuuming carpet
4000	Shrubbery Bed Maintenance/Flower Maintenance
4010	power trimming shrubbery
4020	hand trimming shrubbery/flowers
4030	mulching shrubbery and flowers/trees
4040	weeding shrubbery/flowers
4050	fertilize shrubbery/flowers
5000	Litter Control
5010	sweeping off tennis court
5020	blowing off tennis court
5030	cleaning parking lot
6000	Tree Maintenance
6010	picking up limbs
6020	tree pruning
6030	weeding trees

7000	Minor Turf Care
7010	fertilizing turf
7020	soil preparation
7030	spreading lime
7040	seed and overseeding
7050	aerating
7060	vert cutting
7070	top dressing
7080	lay sod
8000	Administrative and Overhead
8010	special event support
8020	training and administrative duties
8030	staff and safety meeting
8040	travel

Example: 1000 refers to activities related to power mowing etc.

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX E

COMPUTATION AND APPLICATION OF WEIGHTED AVERAGES FOR SELECTION OF MAINTENANCE CREWS

APPENDIX E

Computation and Application of Weighted Averages for Selection of Maintenance Crews

Based on these computations, three crews will be selected from Service Area I.

Service Area	Weighted Averages (acres)	X	Sample Size (crews)	=	# of Crews to be Selected from Service Area
I	577.41/2,569.24		11		3
II	527.47/2,569.24		11		2
III	422.75/2,569.24		11		2
IV	281.29/2,569.24		11		1
V	438.87/2,569.24		11		2
VI	321.45/2569.24		11		1

Example:

Service Area I - 577.41 acres
Acreage of total park inventory = 2,569.24
Weighted average = 577.42 acres/2,569.24 acres = .22
Crews to be selected from Service Area I = .22 x 11 = 3

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX F

RANDOM SELECTION OF MAINTENANCE CREWS/TYPOLOGY PARKS

Appendix F

Random Selection of Maintenance Crews/Typology of Parks

	Beauty Spot (0-3)	Park Lot (0-3)	Mini Park (0-3)	Neighbor-hood Park (3-24)	Community Park (20-100)	Regional Parks (100+)	Total Parks	Total Acreage Maintained
SERVICE AREA I:								
Maintenance Crew 1	0	2	1	5	3	0	11	217.51
Maintenance Crew 2	3	1	0	6	1	1	12	218.00
Maintenance Crew 3	9	1	5	3	0	0	18	33.20
SERVICE AREA II:								
Maintenance Crew 2	2	0	2	5	1	0	10	98.93
Maintenance Crew 3	2	1	5	4	1	0	13	87.06
SERVICE AREA III:								
Maintenance Crew 1	0	0	0	0	0	1	1	127.00
Maintenance Crew 3	4	0	6	1	1	0	17	111.19
SERVICE AREA IV:								
Maintenance Crew 1	0	0	4	2	0	1	7	106.50
SERVICE AREA V:								
Maintenance Crew 1	12	0	4	4	0	1	18	207.70
Maintenance Crew 3	11	0	10	2	1	0	24	131.95
SERVICE AREA VI:								
Maintenance Crew 2:	5	0	3	1	2	0	11	109.05
Total	48	5	37	38	10	4	142	1,548.79

Source: Compiled by Writer for the study from Records in the in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX G

PERCENTAGES OF TYPOLOGY OF PARKS

REPRESENTED IN THE SAMPLE SIZE OF THE STUDY

APPENDIX G

Percentages of Typology of Parks Represented in the Sample Size of the Study

1,548.79 ÷ 0.602 = 60% (percentage of total acreage)

48 ÷ 100 = 0.48 - 48% (percentage of beauty spots)

5 ÷ 7 = 0.714 - 71% (percentage of park lots)

37 ÷ 0.513 = 51% (percentage of mini parks)

38 ÷ 70 = 0.542 = 54% (percentage of neighborhood parks)

10 ÷ 17 = 0.588 = 59% (percentage of community parks)

4 ÷ 7 = 0.571 - 57% (percentage of regional parks)

142 ÷ 270 = 0.525 = 53% (percentage of total parks)

(Note:) The total acreage included in the Study was 60 percent. Considering a cross-classification of the typology of parks and their respeective acreage, all except the beauty spots revealed more than 50 percent representation, therefore it was concluded that the sample size of fair representation of the total park system.

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX H

TOUCHE ROSS TIME VS. PARKS

TIME ESTIMATES

APPENDIX H

Touche Ross Time vs. Parks Time Estimates

	Touch Ross Study --1972-1973		Parks Estimates --1982	
PARK	TOTAL HOURS	AVERAGE	TOTAL HOURS	AVERAGE
Wilson Mill	949.98	17.25	1,981	17.25
Rose Triangle I	30.0	1.0	393	1.0
Dean Rusk	572.10	6.0	990	6.0
Hat Holes (Ansley)	1,426.70	5.62	1,063	11.7
Howell Mill & Beaverbrook	93.9	.9	21	.25
Ormes Park	1,490	7.0	284	7.0
A. D. Williams	202.3	14.0	1,262	14.0

Parks were selected randomly.

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

APPENDIX I

REDUCTION OF EMPLOYEES SAVINGS BASED ON THE TOUCHE ROSS STUDY FOR CURRENT OPERATIONS

APPENDIX I

Reduction of Employees Savings Based on the Touche Ross Study for Current Operations

Total Laborers for all 1982	Seasonal Reduction Using Touche Ross estimate	Difference	Labor Force Reduce by %	Dollars Saved Per 4 Seasonal Reduction in Laborers
I. 12	I. 8	4	33%	$23,912.20
II. 14	II. 10	4	29%	23,912.20
III. 29	III. 20	9	31%	53,802.45
IV. 20	IV. 14	6	30%	35,868.30
V. 11	V. 8	3	27%	17,934.15
VI. 9	VI. 6	3	33%	17,934.15
95	66	29	30.5%	$173,363.45

Source: Compiled by the Writer for the study from records in the City of Atlanta's Office of Budget, Audit and Management.

BIBLIOGRAPHY

Atlanta, GA. Civil Service Rules and Regulations, Atlanta City Code, Volume One (1977).

Atlanta, GA. "Proposal For Reorganization of the Department of Budget and Planning" Office of Mayor, 1982 (Typewritten)

Babbie, Earl R. The Practice of Social Research, 2nd ed., Belmont, California: Wadsworth Publishing Company, Inc. 1979.

Borut, Donald J. and Steve Carter. "Local Productivity Programs: An Overview," Public Management (June 1974), pp. 9-11.

Burkhead, Jesse and Patrick J. Henningan "Productivity Analysis: Search for Definition and Order," Public Administration Review (January/February 1978), pp. 34-40.

Fosler, Scott R. "State and Local Government Productivity and the Private Sector", Public Administration Review (January/February 1978) pp. 22-27.

Guthrie, Thomas L. " Productivity Measurement of City Parks Maintenance, " Public Productivity Review, (September 1975), pp. 59-66.

Hartry, Harry P. "Performance Measurement Principles and Tech niques: An Overview for Local Government," Public Produc tivity Review (December 1980), pp. 312-339.

Hartry, Harry P. "Issues Productivity Measurement for Local Governments", Public Administration Review (November/ December 1972), pp. 776-784.

Hartry, Harry P. "The Status of Productivity Measurement in the Public Sector," Public Administration Review (January/ February, 1978), pp. 28-33.

Haynes, Frederick O. R. Productivity in Local Government, Lexington, Mass.: Lexington Books, 1977.

Kendrick, John W. "Exploring Productivity Measurement in Govern ment," Public Administration Review (June, 1963), pp.59-66.

Marx, Jerome A. "Meanings and Measures of Productivity," Public Administration Review, (November/December 1972), pp. 747-753.

Rosenberg, Herbert H. "Can Work Measurement be Applied to the Personnel Office?" Public Administration Review (January, 1948), pp. 41-48.